



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# **General Aviation Airworthiness Alerts**

**AC No. 43-16**

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**ALERT NO. 234  
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**Improve Reliability-  
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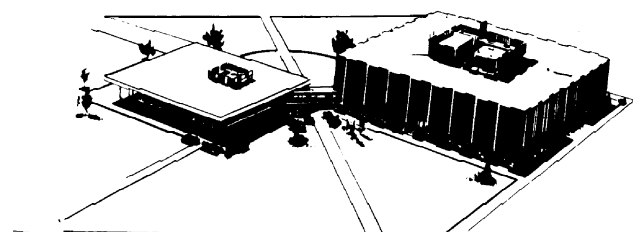
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**U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
WASHINGTON, DC 20590**

# GENERAL AVIATION AIRWORTHINESS ALERTS



**FLIGHT STANDARDS SERVICE**  
Mike Monroney Aeronautical Center

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA;  
ATTN: Designee Standardization Branch (AFS-640);  
P.O. Box 25082; Oklahoma City, OK 73125-5029.

## AIRPLANES

### BEECH

<b>Beech</b>	<b>Nose Landing Gear</b>
<b>Model C23</b>	<b>Failure</b>
<b>Sundowner</b>	<b>3220</b>

The nose landing gear wheel assembly separated from the aircraft during landing.

An investigation revealed the nose gear piston pin sleeve attachment points were "stress cracked" prior to this failure. The submitter speculated the stress cracks were caused by oversteering while using a "tug" during ground handling. It was recommended that ground handling personnel be advised to observe the established towing limits during aircraft ground movements. Also, it was suggested that the nose gear steering limit stop nut sleeve be inspected during preflight inspections. If the nylon bushing appears to be

"dented," the steering unit should be disassembled and inspected thoroughly.

Part total time-5,200 hours.

<b>Beech</b>	<b>Bolt Inspections</b>
<b>Models All</b>	

Information for the following article was furnished by the FAA Aircraft Certification Office located in Wichita, Kansas, and originated from FAA Safety Recommendation 97.174.

The FAA received a report that the Beech Illustrated Parts Catalog (IPC) and the Maintenance Manual do not identify "AN" and "MS" fasteners that require a magnetic-particle inspection prior to installation.

Beech Standard 130909 lists "AN" and "MS" fasteners which, when re-identified with Raytheon part numbers, received a 100 percent magnetic-particle inspection. Use of Raytheon

part numbers as referenced in the IPC and Maintenance Manual indicate these fasteners have been inspected by the magnetic-particle method.

**Beech Models 33 and 35 Series Bonanza Rudder and Elevator Balancing Procedures 2700**

Information for the following article was submitted by the FAA Aircraft Certification Office located in Wichita, Kansas, and originated from FAA Safety Recommendation 97.225.

Section 3 of the Beech Shop Manuals (P/N 33-590011-1C and P/N 35-590096B19) contains information pertaining to elevator and rudder balancing.

After any repainting or repair on the elevator or rudder control surfaces, the respective control surface must be balanced to ensure its static moment, about the hinge line, is within the prescribed limits. The complete elevator or rudder assembly, painted or unpainted, must not be "tail heavy" over the maximum moment indicated by the technical data.

**Beech Model 58P Baron Wing Rigging 5700**

During an inspection, the angle of incidence for the left wing was found to be set too high.

Further investigation disclosed that the upper aft "crush" washer (P/N 105090A032-10J) had slipped down approximately .25 inch. When the "crush" washer was removed, two very well defined sets of serration marks were found. This aircraft had just been through a structural inspection in accordance with the manufacturer's technical data. During the structural inspection, all eight wing attachment bolts had been removed for "Magnaflux" inspection. It was evident from the two sets of serration marks that the

attachment point slipped and was not checked before the bolt was torqued. Closer attention to detail may be the only preventive measure for this type of defect.

Aircraft total time since the previous structural inspection-7.5 hours.

**Beech Model B-60 Engine Oil Cooler Failures Engine Model 7921 Textron Lycoming TIO-541**

The submitter stated two engine oil coolers had failed within a relatively short operating time.

The original oil cooler developed a leak after 2,427 hours of operation. A replacement oil cooler (P/N LW10025) was installed, and this unit developed a leak after approximately 6 hours of operation. Another unit was installed, and it began leaking after 2 hours of operation. When the second oil cooler was removed, it was cut open to determine the cause of the leak. It was found that the oil cooler had been previously repaired by filling the leaking segment with an "industrial-type epoxy" material. It was speculated that epoxy may not be an adequate repair for an oil cooler expected to withstand 100 PSI of pressure and high-operating temperatures.

The submitter stated that a new oil cooler was ordered, installed, and the problem was solved.

Part times as stated above.

**Beech Model B-60 Duke Fuel Pump Failure 2822**

Due to a fuel leak and poor engine performance, the aircraft was delivered to maintenance.

An inspection revealed that fuel was spraying from the junction of the fuel pump (Romec P/N RG9570K4) case halves. The gasket had been pushed out of the sealing surface allowing fuel to escape. The submitter speculated that the "thinness" of the fuel

pump gasket, along with the presence of any oil or grease in the mating area during assembly, contributed to this type of failure. The submitter stated finding similar defects on numerous other occasions. It was recommended that the manufacturer redesign the gasket to make it more substantial and reliable.

Part time since overhaul-219 hours.

<b>Beech</b>	<b>Vacuum System</b>
<b>Model C90A</b>	<b>Leak</b>
<b>King Air</b>	<b>3710</b>

During a landing gear retraction test in the hangar, it was noticed that the vacuum pressure was depleted when the landing gear handle was moved to the "up" position.

An investigation disclosed that the radar cathode-ray tube (CRT) was contacting a vacuum tube (P/N 101-320266-1) that was forward of the instrument panel. The tube had a "worn spot" which was approximately 3 inches by .125 inch, and the wall thickness had been penetrated at one point. It appeared the vacuum tube did not leak until the landing gear handle was moved. This action allowed the vacuum tube to flex enough to create a leak. The instrument panel area should be of great concern during scheduled inspections and maintenance. Problems of chafing in this area have caused numerous defects on virtually all aircraft makes and models, and the results may range from a minor inconvenience to the total loss of an aircraft.

Part total time-2,299 hours.

<b>Beech</b>	<b>Engine-Driven Fuel</b>
<b>Model F-90</b>	<b>Pump Failure</b>
<b>King Air</b>	<b>2822</b>

The aircraft was delivered to maintenance with a report that the left engine-driven fuel pump was inoperative.

Disassembly of the fuel pump (P/N 025323-101-3) disclosed that the drive coupling spline was worn "slick" on the pump drive shaft. The oil-misting hole, used to lubricate the spline area, was plugged with

debris. The drive coupling "ran dry" which resulted in complete spline failure. The submitter stated that a plugged oil-misting hole can be detected by pushing a "pipe cleaner" into the fuel pump drain cavity. If the "pipe cleaner" comes out with products of corrosion or other debris, a lack of lubrication should be suspected, and the drive assembly should be disassembled for proper inspection. The submitter suggested this procedure be accomplished during scheduled inspections.

Part total time-4,877 hours. Part time since overhaul-1,577 hours.

<b>Beech</b>	<b>Air-Conditioning</b>
<b>Model A200</b>	<b>System Failure</b>
<b>King Air</b>	<b>2100</b>

Information for this article was furnished by Mr. John Liccini, an aviation safety inspector with the FAA Flight Standards District Office located in Rochester, New York.

The flightcrew reported the cabin temperature became excessively high when they were approximately 20 miles from their destination. The cabin control was in the "auto mode," and it was changed to the "manual mode." While "toggling down" the cabin temperature, a loud pop or bang was heard, and there was a rapid decompression in the cabin. A mist formed in the cabin, smoke emanated from the overhead vents, and a strong oil smell was present. The crew declared an emergency, and a safe landing was made.

While investigating, the forward air-conditioning system evaporator was found to be ruptured in the center area of the capillary/cooling fin. Further inspection revealed that the suction and discharge lines running from the condenser had been installed in reverse order. Evidently, this occurred 4.5 operating hours prior to this incident during a scheduled inspection. The system was not tested after the inspection because the ambient and cabin temperatures were too cold to activate the system. The submitter recommended that when any air-conditioning system is used after

maintenance, that the cabin temperature be set to a value high enough to cycle the air-conditioning system “on” when cooling is selected and “togglng down” the temperature, as needed.

This report will be the subject of an FAA Safety Recommendation proposed by the submitter. One of the main concerns is that if this decompression had occurred at a high altitude, the aircraft occupants could easily have been incapacitated when the pressurization system would have closed off all but minimal outflow, and 9 pounds of freon and compressor oil would have been injected into the cabin.

Part total time since installation-4.5 hours.

<b>Beech Model 400A Beechjet</b>	<b>Inoperative Pitch Trim 2731</b>
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The flightcrew reported that the pitch trim system was inoperative.

When maintenance personnel investigated, all associated systems and equipment operated properly. However, the pitch trim actuator (P/N 45AS61023-137) would not operate in the “standby” mode. The autopilot system operates through the “standby” motor of the actuator. It was stated that this was the fifth pitch trim actuator failure within the past 10 months. This report has been forwarded to the responsible FAA Aircraft Certification Office for action.

Part total time-59 hours.

**CESSNA**

<b>Cessna Model 172 Skyhawk</b>	<b>Control Yoke Failure 2701</b>
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The pilot reported that during a full-stall landing, the control yoke (P/N 0513168-2) broke. The landing was completed without damage or injuries.

The control yoke failed at the bottom of the left side. The submitter stated this aircraft had been manufactured in 1962 and speculated that age, extreme outside parking area temperatures, and ultraviolet light were major factors in deterioration of the plastic material. Many other aircraft parts, on this as well as other makes and models, are constructed using these plastic materials. They usually display signs of eminent failure such as crazing, chipping, weather check cracks, and even a dull appearance. These conditions should be a warning and justify replacement of the affected part. (For specific applicability and instructions, refer to Cessna Service Letter 64-8.)

Part total time-2,770 hours.

<b>Cessna Model 172F Skyhawk</b>	<b>Rudder Obstruction 2720</b>
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The aircraft owner delivered the aircraft to maintenance with a complaint that the turn coordinator was “one full ball off center” in normal flight. It was also reported that excessive rudder pressure was required to hold the ball in the center.

During an inspection, it was found that when hand pressure was applied to the rudder surface it would only move in one direction. Attempts to move the rudder using the pedals revealed very stiff operation. Further investigation disclosed that the rudder pedal actuating bars were severely corroded. The corrosion was located at the "block" attachment points. The carpet in the area directly below the lower forward windshield strap was damp. The submitter speculated this was the cause of the rudder bar corrosion. It was recommended that this area be checked closely, and all leaks should be repaired promptly. If corrosion is found on the rudder bars, they should be removed for inspection, cleaning, and treatment.

Part total time-2,135 hours.

<b>Cessna</b>	<b>Muffler Defects</b>
<b>Model 172H</b>	<b>7820</b>
<b>Skyhawk</b>	

During an annual inspection, both of the engine mufflers were found cracked.

The cracks were located at the risers, and the baffles had collapsed. It appeared this condition had existed for a considerable amount of time. The loose baffles restricted the engine exhaust, created back pressure, and kept the engine from developing full power. This area should be given close attention at every opportunity.

Part total time-2,800 hours.

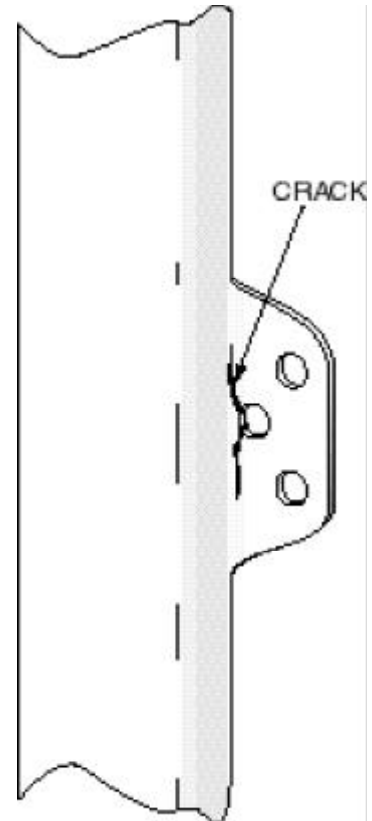
<b>Cessna</b>	<b>Doorpost Defect</b>
<b>Model 172N</b>	<b>5311</b>
<b>Skyhawk</b>	

During a scheduled inspection, the left forward cabin-entry doorpost was found cracked.

The crack was approximately 1.125-inches long and was located on the aft side of the forward doorpost bulkhead (P/N 0513282-3) adjacent to the lower door hinge. The crack ran through one of the door hinge fastener holes. (Refer to

the following illustration.) It was speculated that excessive stress from the entry door may have caused this defect. The FAA Service Difficulty Reporting program data base also contains 12 other similar entries.

Part total time-8,613 hours.



<b>Cessna</b>	<b>Nose Wheel</b>
<b>Model 172RG</b>	<b>Vibration</b>
<b>Cutlass</b>	<b>3252</b>

After a training flight, the aircraft was delivered to maintenance with a report of severe nose wheel vibration.

An inspection revealed that the end of the shimmy damper barrel (P/N 1442112-1), next to the service hole, was broken. The outer retaining ring and bearing head were missing. This installation should be checked for defects

during preflight and regularly scheduled inspections. The submitter did not offer a cause or cure for this problem.

Part total time not reported.

<b>Cessna Model 182 Skylane</b>	<b>Nose Landing Gear Crack 3221</b>
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During an annual inspection, the upper nose landing gear torque link (P/N 0543034-497) was found cracked.

The torque link was cracked on both sides in the radius of the upper forged rib, adjacent to the attachment bolt hole. The submitter believed metal fatigue was the main cause of this defect. It was recommended that the torque link be "dye checked" at frequent periodic intervals.

Part total time-4,848 hours.

<b>Cessna Model 182P Skylane</b>	<b>Carburetor Control Linkage Failure 7602</b>
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After an emergency landing due to engine failure, an engine control inspection was conducted.

It was discovered that with the mixture control pushed to the "full-rich" position, the mixture lever on the carburetor (Marvel Schebler P/N 10-4893-1) could be pushed to the "full-lean" position without movement of the cockpit control or cable. The control cable attachment bolt was not worn and had been properly installed. A groove was found to be "worn" into the mixture control lever. This groove allowed the control cable to slide on the lever.

Part total time not reported. Aircraft total time-1,809 hours.

**Cessna  
Model 210L  
Centurion**

**Defective Main  
Landing Gear  
Actuator  
3230**

The pilot reported that after takeoff the landing gear would not retract. The right main landing gear collapsed during landing.

An investigation disclosed that the right main gear actuator (P/N 1281001-1) had "split" open, which caused a complete loss of hydraulic system fluid. Apparently, the left main gear locked overcenter in the "down" position; however, the right main gear remained in an "unlocked" position. It was suggested that the landing gear actuators be inspected for leakage and other defects at every opportunity, especially those that have accumulated an exorbitant number of operating hours.

Part total time-11,490 hours.

**Cessna  
Model T210  
Centurion**

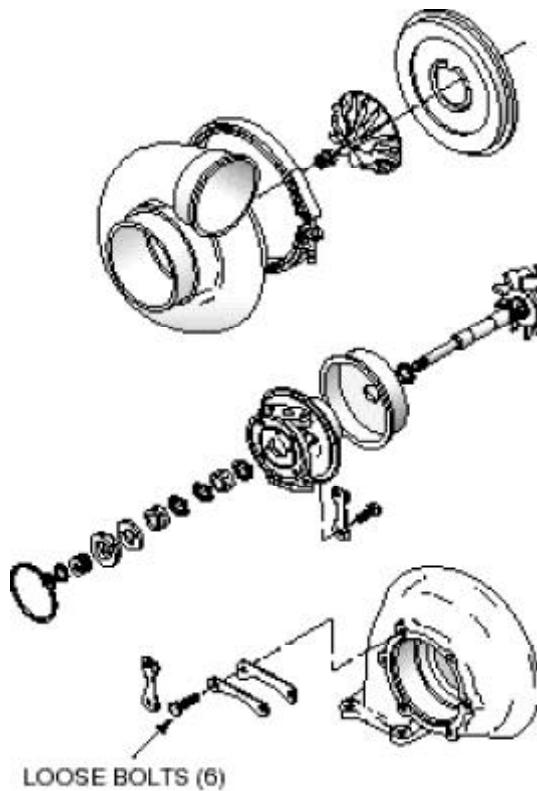
**Defective  
Turbocharger  
Assembly  
8120**

During an annual inspection, the turbocharger center section was found to be loose where it attaches to the hot side.

All six of the attachment bolts were loose (it appeared they had not been tightened during the previous assembly), and two of the bolt-locking tabs had not been set. (Refer to the following illustration.) Exhaust stains indicated the unit had been leaking at this junction. The submitter stated that all bolts and nuts should be checked for torque before safetying and/or setting the locking tabs. It would seem this defect was the result of someone not giving full attention to the task at hand.

Part total time-1,438 hours.





**Cessna  
Model 340A**

**Fuel System  
Obstruction  
7322**

During an after-takeoff climb, the pilot noticed a reduction in fuel flow and a corresponding loss of engine power. A safe landing was made, and maintenance personnel were summoned.

While investigating the cause of this incident, a piece of ferrous material was found lodged in the fuel metering unit (P/N 632916-11). The foreign material was approximately .375-inch long and .125-inch wide, and it was located downstream of the fuel inlet screen. The submitter speculated the metal chip originated from the "part-cleaning" process during a previous overhaul.

Part time since overhaul-183 hours.

## DASSAULT

**Dassault  
Model 900EX  
Falcon**

**Restricted Rudder  
Control  
2720**

While taxiing, the flightcrew checked the flight controls for proper movement. When the rudder was checked, a restriction was noticed.

The rudder travel was limited to the left by approximately half. A loud "clunking" noise was heard with application of the right rudder pedal. The noise seemed to emanate from under the floor in the area of the forward lavatory. When the forward lavatory floor was removed, the lavatory drain cable (P/N 55-8311-2140) was found resting against the rudder torque tube, which restricted its travel. With the relatively short time in service for this aircraft, it is suggested that operators of like aircraft should inspect this area for a similar condition.

Aircraft total time-155 hours.

## NORTH AMERICAN

**North American  
Model NA-265-80  
Sabreliner**

**Wheel Brake And  
Landing Gear Failure  
3230**

Information for the following article was submitted by the National Transportation Safety Board (NTSB) and was the result of an aircraft accident investigation.

The aircraft had been completely stripped and repainted just prior to the accident.

When the landing gear was retracted after takeoff, the pilot noticed the landing gear warning light was illuminated. The landing gear was extended; however, the right main gear indicator (green) light did not illuminate. Use of the emergency landing gear extension system failed to cure the problem. During landing, there was no significant "pedal pressure" when the wheel brakes were applied. The lack of braking action resulted in the aircraft over-running the runway. The

right main gear collapsed, and the right wing contacted the ground.

An examination disclosed that the main gear “down lock” pins had been painted. When the gear was retracted after takeoff, the right gear pin stuck in the “retracted” (unlocked) position. Additionally, the power brake valve pistons had been painted which resulted in at least one piston sticking in the “emergency” (power off) position when the pilot tested the emergency brakes before takeoff.

This accident could have been prevented by masking the affected components prior to painting. Any aircraft with hydraulic actuators (such as those used on this aircraft) which are mounted in areas susceptible to paint overspray should be of great concern during painting operations.

**PIPER**

<b>Piper Model PA 24-180 Comanche</b>	<b>Landing Gear Warning Horn Failure 3260</b>
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After a gear-up landing, the pilot stated the landing gear warning horn did not sound.

When the aircraft was lifted to extend the landing gear, a test revealed the audible warning system was inoperative. Further inspection disclosed that the switch mount on the throttle was adjusted to the maximum position away from the throttle rod, and it had been “pushed away” from the shaft. It appeared the switch mount had been moved when it contacted a wire bundle that had been routed just above the switch. It was suggested that this area be checked for proper clearance during scheduled inspections and maintenance.

Part total time-3,121 hours.

<b>Piper Model PA 28-181 Archer</b>	<b>Throttle Control Failure 7603</b>
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During a landing approach, control of the engine throttle was lost, the engine power decreased to idle, and an off-airport landing was made.

During an inspection of the aircraft, the throttle control serrated lever (P/N 12-856) was found loose at the carburetor attachment. The castle nut and cotter pin were installed; however, the submitter speculated the attaching hardware may not have been properly installed and torqued. This would be a good area for the focus of your attention during scheduled inspections.

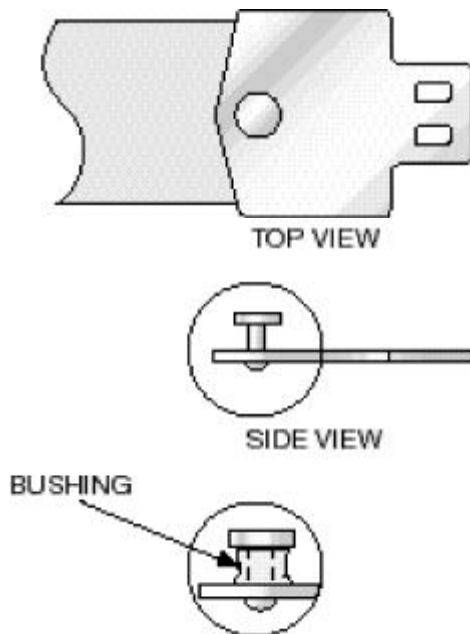
Part total time-53 hours.

<b>Piper Model PA 28RT-201T Turbo Arrow</b>	<b>Defective Seat Restraints 2560</b>
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During a scheduled inspection, both of the pilot seat-restraint systems were found defective.

The nylon shoulder harness retaining bushing (P/N FD5667-3) was found to be missing from both pilot’s seat lapbelts. (Refer to the following illustration.) The restraint system was manufactured by Davis Aircraft Products, Inc., and their representative stated there are no authorized field repairs for this condition. The representative stated Davis Aircraft Products, Inc. will replace the defective parts at no charge. This condition may exist on various other aircraft, and should be corrected when found. “Tie wraps” should not be used as a replacement for the nylon bushing!

Part total time-2,267 hours.



**Piper**  
**Model PA 31P**  
**Navajo**

**Engine Exhaust**  
**System Failure**  
**7800**

The pilot stated that during the takeoff roll, a loud “clunking” sound and an abnormal engine exhaust noise were heard. It sounded as if something had fallen off of the aircraft.

It was found that an engine exhaust pipe had separated from the engine. A hole was burned through the engine cowling as a result of exhaust gases being directed onto the metal cowling surface. Further inspection disclosed that an isolator bracket (P/N 47014-02) had broken, and all of the exhaust system slip joints were loose. The submitter speculated that the isolator bracket failed due to vibration which was induced by the loose slip joints. It was recommended that the engine exhaust system should be pressure tested at frequent intervals, and that loose slip joints should be repaired.

Part total time not reported.

**Piper**  
**Model PA 31T-620**  
**Cheyenne II**

**Air-Conditioning**  
**System Failure**  
**2100**

After returning from a flight, the pilot reported the air-conditioning system was inoperative.

During an inspection of the system, the quill shaft drive pulley was found loose. The quill shaft was attached to the drive pulleys by a “Woodruff” key which had failed. Since the shaft was turning freely, without driving the quill shaft, excessive heat was generated. The heat deformed the quill shaft, pulleys, and attaching hardware. The drivebelts were severely damaged and were not in serviceable condition. The cause of this failure was not given by the submitter.

Part total time not reported.

**Piper**  
**Model PA 32-301T**  
**Turbo Saratoga**

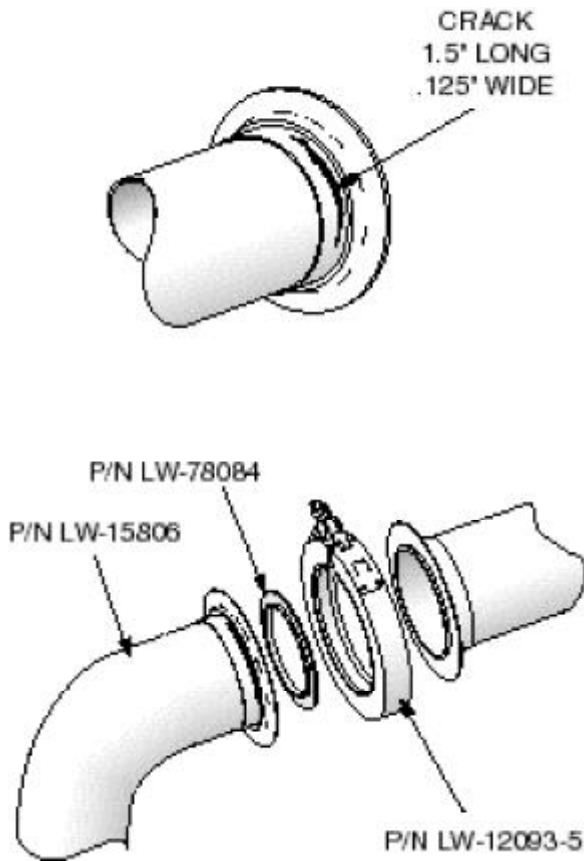
**Engine Exhaust**  
**System Cracks**  
**7800**

During a routine engine exhaust system inspection, the upper-right engine cowling louvers were found stained.

When the cowling was removed, a heavy exhaust stain was found. It appeared the exhaust leak originated at the upper-right intermediate exhaust pipe flange clamp. In an attempt to “seat” the gasket, the clamp was loosened and rotated; however, this procedure failed to stop the exhaust leak, and the clamp was removed. A crack, which was approximately 1.5-inches long and .125-inch wide, was found at the intermediate exhaust pipe (P/N LW15806) flange base. (Refer to the following illustration.) The exhaust pipe was removed, the flange area was cleaned, and numerous stress cracks were revealed around the circumference. The submitter speculated these cracks may have been caused by vibration, extreme temperature differentials, or thermal shock. The submitter suggested that a complete “soap-pressure check” be accomplished on the exhaust system every

25 operating hours, and that the system be disassembled for a "visual check" during every annual inspection.

Part total time-1,050 hours.



<b>Piper</b>	<b>Electrical System</b>
<b>Model PA 34-200T</b>	<b>Failure</b>
<b>Seneca II</b>	<b>2400</b>

The pilot reported experiencing a complete electrical system failure during flight. The landing gear was extended manually, and a safe landing was made.

An investigation revealed that the "master switch" (P/N 587-837) had failed internally and caused an "open circuit." The submitter stated the master switch was corroded and could have caused the failure. This was an "original

equipment part." The age and the high-operating time may have been contributing factors.

Part total time not reported.

<b>Piper</b>	<b>Turbocharger Oil</b>
<b>Model PA 34-200T</b>	<b>Leak</b>
<b>Seneca II</b>	<b>8120</b>

The pilot reported that after a 15-minute stop at a transient airport, the left engine smoked excessively when it was started. The start procedure was aborted, and the engine was secured. The smoke was blue, and oil was running out of the cowl.

An investigation disclosed that the turbocharger oil seal had failed. It was evident that failure of the seal was caused by excessive turbocharger oil pressure. Further examination revealed the excessive oil pressure was caused by failure of the check valve in the oil return line. The check valve was stuck in the "closed" position. The turbocharger had been recently overhauled. The submitter stated that both of the check valves should have been replaced at that time.

Part total time-32 hours.

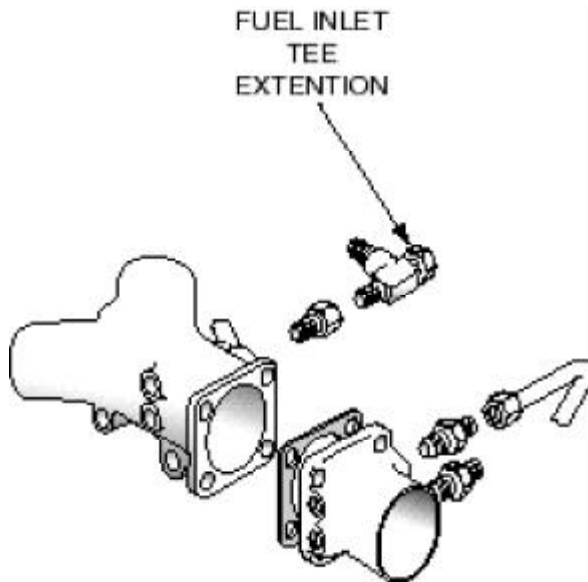
<b>Piper</b>	<b>Engine Failure</b>
<b>Model PA 34-220T</b>	<b>7320</b>
<b>Seneca III</b>	

The left engine failed during flight, and the pilot observed fuel coming from the engine cowl. A safe single-engine landing was made.

While investigating the cause of this incident, it was found that an "extension" fitting on the fuel injection assembly had broken. (Refer to the following illustration.) The fitting (P/N 630119) failed at the threads used to attach it to the throttle control. The available evidence indicated the fitting had suffered previous damage from "removal attempts." The submitter stated it is common for maintenance personnel to mistakenly believe that this fitting conceals a fuel screen which

requires inspection. It was speculated the fitting had been damaged during repeated removals and installations.

Part total time not reported.



**Piper**  
**Model PA 44-180**  
**Seminole**

**Landing Gear Failure**  
**3230**

The right main landing gear collapsed under the aircraft weight during landing.

An investigation disclosed that the internal portion of the right main gear downlock switch (P/N 86409-02) had separated from the switch housing. The wires became jammed under the downlock hook preventing complete engagement of the hook. Operational tests revealed that side-load pressure on the landing gear would cause the downlock hook to disengage and the gear to retract. Evidently, the switch wires were not properly secured and became entangled in the landing gear retraction mechanism.

Part total time-6,465 hours.

## HELICOPTERS

### BELL

**Bell**  
**Model 206L-1**  
**Long Ranger II**

**Uncommanded Float**  
**Deployment**  
**3246**

The flightcrew reported that during cruise flight, the floats inadvertently deployed. The "float power" circuit was not armed at the time of deployment. The aircraft was landed safely. After a thorough investigation, the cause of this defect could not be determined.

Other cases of inadvertent float deployment have been reported. However, in these cases, the "float power" circuits were armed prior to the deployment. The cause of uncommanded deployment in these cases was attributed to "stray voltage."

Anyone having experience with this type of problem is encouraged to submit a report describing the circumstances of each occurrence.

If further pertinent information is reported, it will be printed in a future edition of this publication.

Part total time not reported.

### McDONNELL DOUGLAS

**McDonnell Douglas**  
**Model 369D**  
**Hughes 500D**

**Fuel Tank Failure**  
**2810**

The pilot reported engine failure while transferring fuel from the auxiliary fuel tank to the main tank. The helicopter was landed without incident.

An investigation disclosed the auxiliary fuel tank had collapsed. Masking tape was found blocking the tank standpipe vent, which caused a vacuum sufficient to collapse the tank. The submitter speculated that when the helicopter was manufactured, masking tape

was applied to the standpipe vent while it was being painted, and the masking tape was not removed.

Helicopter total time-2 hours.

<b>McDonnell Douglas Model 369HS (Hughes 500)</b>	<b>In Flight Cabin Door Separation 5210</b>
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During flight, the right main cabin door opened and separated from the aircraft.

The door assembly had been modified by installation of Supplemental Type Certificate (STC) SH2530NM. This STC allows replacement of the standard door hinges with “quick removal door hinges.” During an investigation, it was discovered that the door-latching feature was not properly engaged. This allowed the latch to “vibrate” to the “open” position and separate from the hinges. The submitter stated: “The STC does not contain preflight information for the pilot to follow, and the STC needs to be revised to incorporate pilot information (for proper door operation).”

Part total time not reported.

**SIKORSKY**

<b>Sikorsky Model S-61N</b>	<b>Primary Servo Spring Failure 6710</b>
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The pilot reported that during a normal flight a firm lateral pressure was felt in the cyclic flight control system. A precautionary landing was made.

An inspection of the main rotor cyclic control system disclosed that the primary servo (bootstrap) spring (P/N S6165-20262) was broken. The spring was broken at the loop end where it was attached to the collar assembly. The submitter did not offer a cause for this failure.

Part time since overhaul-798 hours.

**AGRICULTURAL AIRCRAFT**

**BELL**

<b>Bell Model 47G2A1</b>	<b>Tail Rotor Gear Box Housing Corrosion 6520</b>
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While the cause of a loose tail rotor guard was being investigated, the guard was removed from the tail rotor gear box, revealing severe corrosion damage.

This helicopter was used extensively for agricultural operations for 3 years. It was sold in 1984, after which it was no longer used for agricultural work.

The cavity around the tail rotor guard was packed with “fertilizer” material. When the fertilizer was removed, it was found that the magnesium housing (P/N 47-645-212-15) had been consumed by corrosion which had penetrated the housing wall thickness. The gear box oil seal had been destroyed; however, the fertilizer material had been packed tightly into the cavity and prevented the oil from escaping. The submitter recommended that the gear box split line be protected from collecting foreign material by application of a sealant.

It seems amazing that this helicopter could remain in service from sometime in 1984 until the date of this report (November 16, 1997) without this defect being discovered! We should be a little more concerned with the preservation of life, limb, and property!

Helicopter total time-2,292 hours. Tail rotor gear box time since overhaul was approximately 300 hours.

## AMATEUR, EXPERIMENTAL, AND SPORT AIRCRAFT

### KITFOX

<b>Kitfox</b>	<b>Defective Spark</b>
<b>Model I</b>	<b>Plugs</b>
<b>Engine Rotax</b>	<b>7421</b>
<b>Model 532UL</b>	

Due to procurement difficulties, the manufacturer's recommended spark plugs were replaced with an "automotive equivalent."

During a routine inspection, after 25 hours of operation, both spark plugs were found still operating; however, they were defective. The rear cylinder spark plug was loose inside the porcelain insulator. The front cylinder spark plug electrode was broken inside the porcelain insulator housing. Apparently, enough ignition voltage passed through the electrode to sustain operation. The only thing keeping the broken spark plug intact was the safety wire used to secure the insulated spark plug cap (boot) to the base of the plug. Even though the engine manufacturer does not recommend spark plug cap safety wire, it is common practice to use it, since the cap only "snaps" onto the spark plug.

The submitter stated that in the future he will only use the manufacturer-recommended spark plugs, and will continue to use safety wire.

Part total time-25 hours.

### LANCAIR

<b>Lancair</b>	<b>Engine Fuel</b>
<b>Model IV</b>	<b>Starvation</b>
	<b>2823</b>

During an accident investigation, the "kit-supplied" fuel selector valve was found modified from its original configuration.

The configuration of the fuel selector valve had been changed from "OFF/LEFT/RIGHT" mode of operation to "OFF/BOTH/LEFT/RIGHT" mode of operation. The kit manufacturer does not recommend a "BOTH" position for this aircraft. Postcrash tests show that when one fuel tank is empty and the opposite tank is being used, the selector valve will allow air from the empty tank to be drawn into the fuel system. This causes an "overly-lean" mixture and/or interruption in the fuel flow. The kit manufacturer has published several newsletters addressing this subject. This fuel selector valve has been suspected as a factor in several other aircraft accidents.

Part total time-12 hours.

## AIR NOTES

### AIRCRAFT DEICING/ANTI-ICING FLUID

The FAA has issued a notice to all its inspectors in the form of a Flight Standards Information Bulletin For Airworthiness (FSAW) 97-22 which supplements FAA Order 8300.10, Airworthiness Inspector's Handbook. The bulletin advises that Union Carbide Corporation (UCAR) issued a notice to their customers concerning the proper use of their deicing/anti-icing fluids.

UCAR has published the results of tests they conducted on "ULTRA+" fluid. The UCAR letter (dated October 8, 1997) is entitled "IMPORTANT SAFETY INFORMATION ADVISORY." The following notice was included in the UCAR letter.

**"DO NOT DILUTE UCAR® AIRCRAFT  
DEICING/ANTI-ICING FLUID  
ULTRA+."**

Findings show that diluting the fluid with water changes the ability of the fluid to meet certain standards.

All operators using this deicing/anti-icing fluid should have a copy of the UCAR letter. Also, certificated air carrier operators using ULTRA+ fluid should revise their handling procedures to include the information contained in the UCAR letter.

A copy of the UCAR letter may be obtained by writing to the following address: Union Carbide Corporation; 39 Old Ridgebury Road; Danbury, CT 08817-0001.

FSAW 97-22 is also available on the Internet at the following address (URL):

<http://www.faa.gov/avr/afs/fsaw/fsaw9722.txt>

#### **AIRWORTHINESS DIRECTIVES (AD'S) ISSUED IN NOVEMBER 1997**

<b>85-02-05R1</b>	Piper models - requires installing a Piper part number placard for operation of a parking brake.	<b>97-23-09</b>	deHavilland DHC-6 series airplanes - requires inspecting fuselage side frame flanges.
<b>97-22-16</b>	Raytheon Aircraft 1900, 1900C, and 1900D airplanes - requires installing a placard that restricts use of vent blower assemblies.	<b>97-23-17</b>	Raytheon 90, 100, 200, and 300 series airplanes - requires inspecting Ethylene Vinyl Acetate (EVA) tubing near copilot's foot warmer.
<b>97-23-01</b>	Fairchild SA226 and SA227 series models - requires action to prevent failure of pitch trim actuator.	<b>97-24-05</b>	Aerospace Technologies of Australia N22 and N24 series airplanes - requires inspecting aft wing break connectors for arcing damage.
<b>97-23-04</b>	Pilatus PC-12 and PC-12/45 airplanes - requires replacing fuel tank vent valves.	<b>97-24-07</b>	Jetstream 3101 and 3201 airplanes - requires installing magnetic latching relays.
<b>97-23-05</b>	Avions Pierre Robin model R3000 airplanes - requires replacing attachment bolt.	<b>97-24-08</b>	Burkhart Grob, Luft-und Raumfahrt Model G102 Astir CS sailplanes - requires replacing elevator control lever.
<b>97-23-08</b>	Avions Pierre Robin model R3000 airplanes - requires inspecting bridle cable ends.	<b>97-24-09</b>	Burkhart Grob, Luft-und Raumfahrt Model G103 C Twin III SL sailplanes - requires inspecting propeller bearing and upper pulley wheel for increased play.
		<b>97-24-10</b>	Burkhart Grob G103 Twin Astir sailplanes - requires replacing airbrake overcenter lever.
		<b>97-12-02</b>	McDonnell Douglas MD900 helicopters - requires installation of redesigned airworthy link assembly.
		<b>97-23-06</b>	Schweizer 269 models - requires inspection of ring gear teeth for surface deterioration.
		<b>97-23-07</b>	Eurocopter Deutschland GmbH Model MBB-BK 117 helicopters - establishes new retirement life for clutch and appropriate entry.



- 97-24-04** Eurocopter France SE and SA models - requires inspection of main rotor blade reinforcement strips.
- 97-24-17** Bell 407 helicopters - requires installation of tail rotor drive system.
- 97-21-09** Allison Engine Model 250-C47B turboshaft engines - requires replacing main electrical harness assembly.

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### ALERTS ONLINE

This publication is now available through the FedWorld Bulletin Board System (BBS), via the Internet.

You may directly access the FedWorld BBS at telephone number (703) 321-3339. To access AC 43-16, General Aviation Airworthiness Alerts, through the Internet, use the following address: "<http://www.fedworld.gov/ftp.htm>". This will open the "FedWorld File Transfer Protocol Search And Retrieve Service" screen. Page down to the heading "Federal Aviation Administration" and select "FAA-ASI". The file names will begin with "ALT", followed by three characters for the month, followed by two digits for the year (e.g. "ALTJUN96.PDF").

Also available at this location are the Service Difficulty Reports (SDR's) for the past 2 months, which may be of interest.

The Regulatory Support Division (AFS-600) has established a "HomePage" on the Internet, through which the same information is available. The Internet address for the AFS-600 "HomePage" is:

"<http://www.mmac.jccbi.gov/afs/afs600>"

Also, this address has a large quantity of other information available. There are "hot buttons"

to take you to other locations and sites where FAA Flight Standards Service information is available. If problems are encountered, you can "E-mail" us at the following address.

If you wish to contact the staff of this publication, you may do so by any of the means listed below.

**Editor:** Phil Lomax, AFS-640  
**Telephone No.:** (405) 954-6487  
**FAX No.:** (405) 954-4570  
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We welcome the submission of aircraft maintenance information via any form or format. This publication provides an opportunity for you to inform the general aviation community of problems you have encountered as well as bringing them to the attention of those who can resolve these problems. Your participation in the Service Difficulty Program reporting process is vital to ensure accurate maintenance information is available to the general aviation community.

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### ELECTRONIC AVAILABILITY OF INFORMATION

In light of the previous article, we solicit your input and ideas for the future of this publication. The electronic information media has made available a vast amount of information in a more expedient and efficient manner. We believe the expanded use of this media can bring about the conveyance of safety

information in a more efficient and timely manner.

We are currently distributing approximately 28,000 printed copies of this publication each month, and the distribution number continues to increase. The cost for publishing, printing, and mailing this publication has also increased, and there has been a substantial negative impact on our budget allotment.

In an effort to save tax dollars and make better use of the electronic media, we encourage our readers to cancel their printed copy subscription to this publication and use the computer to download the monthly issues. (The instructions for downloading the Alerts were given in the preceding article.) We will be happy to help you if you require further assistance. Some of you may not yet have the equipment necessary to receive the information electronically, and you are welcome to continue receiving it in the printed form.

There have been some efforts to charge an annual subscription fee for this publication. So far, these efforts have not been given much credence. We will make every effort to keep this a free-of-charge publication. However, we need your input and ideas. Would you be willing to pay a nominal subscription charge for this publication?

We appreciate your interest in this publication and the opportunity to serve you. Please offer any comments, questions, or suggestions to us via any of the means listed in the preceding article.

## **SUSPECTED UNAPPROVED PARTS SEMINAR**

As announced in previous editions of the Alerts, the Designee Standardization Branch, AFS-640, will begin presenting the Suspected Unapproved Parts Seminar. The first seminar will be held on January 14-15, 1998, in Sacramento, California. The second seminar will be held on January 28-29, 1998, in Fort Worth, Texas.

Seminar dates will be announced in the Alerts, the Designee Update Newsletter, and on the Internet under FedWorld.gov. You may access the FedWorld BBS directly at (703) 321-3339. You may access the Alerts through the Internet, using the Regulatory Support Division, AFS-600, "HomePage" at the following address.

<http://www.mmac.jccbi.gov/afs/afs600>

The seminar will discuss the following:

1. What is an approved part?
2. How can approved parts be produced?
3. What is a suspected unapproved part?
4. How is a suspected unapproved part reported in accordance with FAA Order 8120.10A, Suspected Unapproved Parts Program, and utilizing FAA Form 8120-11, Suspected Unapproved Parts Notification?

The cost of this 8-hour seminar will be \$60. The seminar may be used for the Inspection Authorization (IA) renewal training requirement contained in Title 14 of the Code of Federal Regulations (14 CFR) part 65, section 65.93(a)(4).

The seminar is open to the aviation industry. Anyone wishing to attend may telephone (405) 954-0138. Payment is required in advance by using VISA, MasterCard, or a check.

Following is a list of the Suspected Unapproved Parts Seminar dates and locations for 1998.

**Suspected Unapproved Parts Seminar**  
**AFS-75 - Suspected Unapproved Parts**  
**National Seminar (SUPS):**

<b><u>Seminar No.</u></b>	<b><u>1998</u></b>	<b><u>Location</u></b>
759801	Jan 14	Sacramento, CA
759813	Jan 15	Sacramento, CA
759802	Jan 28	Ft. Worth, TX
759812	Jan 29	Ft. Worth, TX
759803	Feb 11	College Park, GA
759804	Apr 22	Charleston, WV
759805	May 13	Cleveland, OH
759806	Jul 15	Seattle, WA
759807	Jul 17	Anchorage, AK
759808	Aug 5	Ft. Lauderdale, FL
759809	Sep 16	Springfield, IL
759901	Oct 21	Rochester, NY
759902	Nov 18	Wichita, KS

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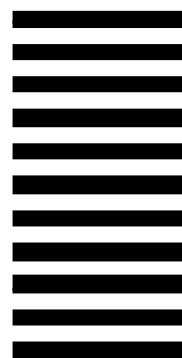


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